

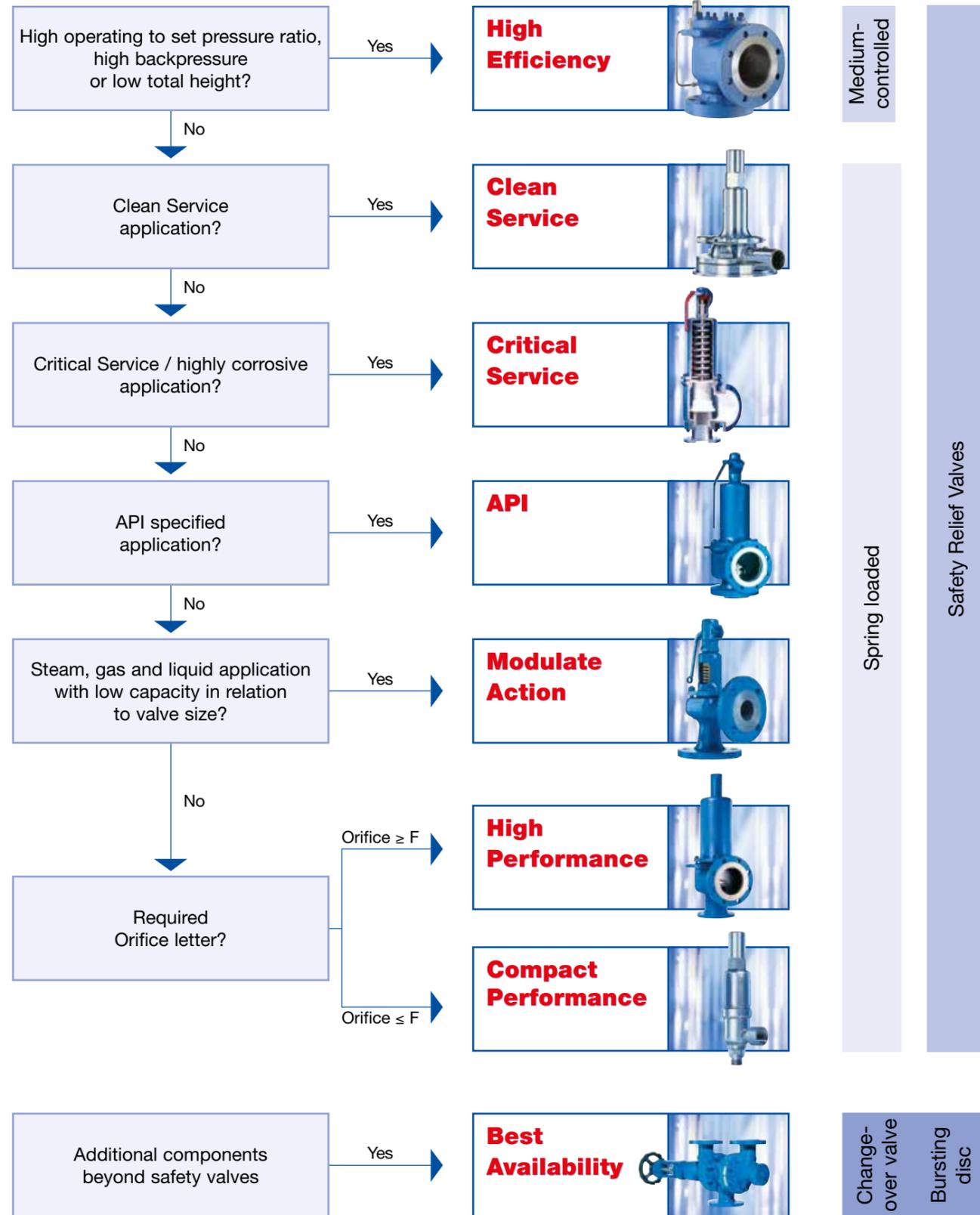
# LESER at a glance



**LESER**

[The-Safety-Valve.com](http://The-Safety-Valve.com)

**Valve finder**  
Product Group



**Safety Valves**  
Process and General Industrial Safety Valves



Type 526

**API Series 526**

Flanged safety valves that meet all the requirements of API 526 such as standardized orifices and center-to-face dimensions. Their robust construction makes them especially suitable for high pressures and materials like Duplex, Monel or Hastelloy

Applications	Product features
<ul style="list-style-type: none"> <li>Refineries</li> <li>Chemical industry</li> <li>Petrochemical industry</li> <li>Oil and gas – Onshore and Offshore</li> </ul>	<ul style="list-style-type: none"> <li>Valve sizes 1" through 8", Orifice D through T</li> <li>Materials: WCB, CF8M, WC6, LCB and in API Alloy Concept materials like Duplex, Super Duplex, Monel, Hastelloy and Inconel with short delivery times</li> <li>Design according to API 526</li> <li>Great variety of options and flanged connections available</li> <li>Standard metal sealing, soft seat as option</li> <li>Single trim for steam, gas and liquid</li> </ul>

**Compact Performance Series 437, 459**

Threaded and flanged safety valves with compact dimensions for economical protection of small and mid-sized capacities. Many orifice diameters, seals and connections offer a very wide area of application.

Applications	Product features
<ul style="list-style-type: none"> <li>Thermal relief</li> <li>Air/gas compressors and pumps</li> <li>Technical gases and CO<sub>2</sub> plants</li> <li>LPG/LNG terminals, carriers etc.</li> <li>Chemical equipment and piping</li> <li>Cryogenic systems and oxygen applications</li> </ul>	<ul style="list-style-type: none"> <li>Great variety of threaded or flanged connections</li> <li>Valve sizes from 3/8" through 1 1/2"</li> <li>Broad set pressure range up to 850 bar / 12328 psig</li> <li>Wide range of materials and options to fit any application</li> <li>Stellited metal sealing for longer product life</li> <li>Soft seat for superior tightness</li> <li>Single trim for steam, gas and liquid</li> </ul>



Type 437

Type 459



Type 441

**High Performance Series 441, XXL, 444, 441 Full nozzle, 458**

Flanged safety valves with especially high capacity for their size. With a large quantity of valve sizes, pressure ranges and product options, they have proven themselves as a universal safety valve for many applications.

Applications	Product features
<ul style="list-style-type: none"> <li>Heat exchanger</li> <li>Chemical equipment and piping</li> <li>General steam installations</li> <li>All industrial applications independent from the medium</li> <li>Air/gas compressors and pumps</li> </ul>	<ul style="list-style-type: none"> <li>Great variety of types, materials and options to fit any application</li> <li>Valve sizes from DN 20 through DN 400, 1" through 16"</li> <li>Flange connections according to DIN EN, ANSI/ASME and other</li> <li>High capacity compared to the API requirements</li> <li>Standard metal sealing</li> <li>Single trim for steam, gas and liquid</li> </ul>

**Safety Valves  
Specialties**



**Clean Service  
Series 48x**

Safety valves for the food, beverage and pharmaceutical industries that meet all the relevant standards and regulations such as DIN 11866 or ASME BPE.

Applications	Product features
<ul style="list-style-type: none"> <li>Pharmaceutical industry</li> <li>Breweries</li> <li>Food and beverage industry</li> <li>Cosmetic industry</li> </ul>	<ul style="list-style-type: none"> <li>Valve sizes DN 25 through DN 100, 1" through 4"</li> <li>Great variety of aseptic connections (e. g. clamps, threads, flanges) and option to fit any application</li> <li>Materials: Stainless steel 1.4404 / 316L, 1.4435 / 316L and special</li> <li>Minimum dead space design and flush-mounting capability</li> <li>Soft seat (FDA compliant elastomers) for superior tightness</li> <li>Gap and crevice free design of internals</li> <li>Elastomer bellows for protection of the hard to clean parts</li> <li>Surface grades according to ASME BPE-2002 and DIN 11866</li> <li>Single trim for steam, gas and liquid</li> </ul>

**Critical Service  
Series 447, PTFE-lined 546, 449**

PTFE-lined flanged safety valves for corrosive media such as chlorine, acids, and lyes. With their highly resistant lining they offer a safe solution for corrosive media.

Applications	Product features
<ul style="list-style-type: none"> <li>Corrosive or aggressive chemicals</li> <li>Chemical equipment and piping</li> <li>Chlorine manufacture and processing</li> <li>Reducing acids (e. g. hydrochloric acid, acetic acid)</li> <li>Alkalis or caustic service</li> <li>MDI systems</li> </ul>	<ul style="list-style-type: none"> <li>Valve sizes DN 25 through DN 100, 1" through 4"</li> <li>Flange connections according to DIN EN, ANSI/ASME and other</li> <li>PTFE lining or special materials</li> <li>A PTFE or metal bellows protects the bonnet area against product influences</li> <li>Smooth inside surface avoid adherence of corrosive matters</li> <li>Single trim for steam, gas and liquid</li> </ul>



Type 447



Type 433

**Modulate Action  
Series 433**

Flanged safety valves with a standard or proportional opening characteristic. They minimize medium loss when opening and are used for thermal relief applications, liquid service and protection from pressure peaks.

Applications	Product features
<ul style="list-style-type: none"> <li>Thermal expansion</li> <li>Reciprocating compressors and plants with pulsating operating pressure</li> <li>Heat transfer oil systems</li> <li>Protection of liquids</li> <li>Overflow operation</li> <li>Mechanical engineering (OEM)</li> </ul>	<ul style="list-style-type: none"> <li>Great variety materials and options to fit any application</li> <li>Valve sizes DN 15 through DN 150, 1/2" through 6"</li> <li>Flange connections according to DIN EN, ANSI/ASME and other</li> <li>Low overall height and low weight</li> <li>One connection size for inlet and outlets</li> <li>Single trim for steam, gas and liquid</li> </ul>

**Safety Valves  
Medium controlled**

Increase the efficiency of your plant by using

- Higher operating pressure than is possible with regular spring-loaded safety valves, as High Efficiency safety valves guarantee tightness right until set pressure.
- Lower media loss during blow-off because High Efficiency safety valves have low opening and reseating pressure differences.
- Safe operation irrespective of back pressure due to the fact that back pressure has no influence on the opening characteristics of High Efficiency safety valves

**High Efficiency  
Series 800 – Pilot Operated Safety Valve**

Pilot Operated Safety Valves are employed especially for conditions where the difference between set pressure and closing pressure is very small and in cases of high back pressure.

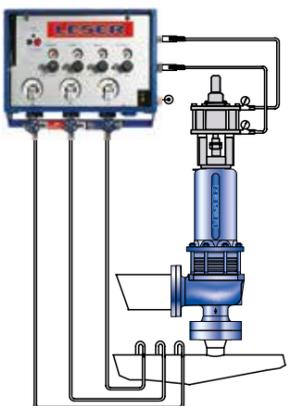


Applications	Product features
<ul style="list-style-type: none"> <li>Oil and gas production, onshore, offshore</li> <li>Refinery (Oil and gas processing)</li> <li>Gas distribution</li> </ul>	<ul style="list-style-type: none"> <li>Valve sizes DN 25 through DN 200, 1" through 8", Orifice D through T</li> <li>Materials: 1.0619, 1.4408, WCB, LCB, CF8M</li> <li>Full bore for higher capacity based on nominal size.</li> <li>Integrated tubing reduces danger of freezing, damage or leakage</li> <li>Integrated backflow preventer improves versatility of standard model</li> </ul>

**High Efficiency  
Series 800 – Supplementary Loading System**

Supplementary loading systems provide optimal tightness right up to set pressure and improved protection for high temperature media and high set pressures.

Applications	Product features
<ul style="list-style-type: none"> <li>Steam producers</li> <li>Paper mills</li> <li>Sugar refineries</li> </ul>	<ul style="list-style-type: none"> <li>Adjustable opening and reseating pressure difference for adjustment to plant situation.</li> <li>Decoupling of control system and safety valve, this means that safety valves with supplementary loading can also be used under extreme conditions such as e.g. temperatures above 500 °C or contaminated fluids.</li> <li>The triple redundancy of pressure tapping and regulation guarantees the maximum possible reliability.</li> <li>The Series 700 can also be fitted to competitor safety valves to ensure a stable system operation.</li> </ul>



**Safety Valves**

**Additional products and components**

Change-over valves are used to connect two safety valves to a pressure system. One safety valve is in operation and the other one is on standby. The safety valve on standby can be dismantled and serviced during ongoing operation of the system – the protection of the system against excessive pressure remains guaranteed.

**Best Availability**

**Type 310 – Change-over Valve**

Change-over valves allow uninterrupted plant availability which increases plant productivity.

**Applications**

Change-over Valves are used in plants which cannot or should not be switched off such as:

- Storage tanks for industrial gas
- Bitumen plants
- Oil fields
- Ethylene plants
- Refineries

**Product features**

- Uninterrupted operation
- Simple handling
- Heavy-duty design



The combination of a LESER safety valve and bursting disc combines the advantages of both safety devices.

**Best Availability**

**Series 350 – Safety Valve – Bursting Disc combination**

A bursting disc safety valve combination meets the highest tightness requirements and ensures controlled operation after a bursting disc bursts.

**Applications**

The combination of bursting disc and safety valve is the solution for the following applications:

- Protection of the safety valve from corrosion or coatings.
- Protection from operating conditions which could impair the functionality of the safety valve.
- Safeguarding of the process with the highest possible tightness.
- To prevent a complete media loss after the bursting of the bursting disc.
- Avoidance of an uncontrolled shut down of a plant after the bursting of the bursting disc.
- To achieve cost advantages for aggressive media.

**Product features**

- Conformance to highest tightness requirements.
- Combination of advantages of safety valve and bursting disc in TUEV certified connection.
- Controlled operation after bursting of bursting disc



**Valvestar®**

**The sizing software for safety valves**



VALVESTAR®, the sizing program for safety valves developed by LESER, supports all leading worldwide codes and standards. In addition to calculations and sizing the program provides user designed and configurable individual reports for technical documentation and archiving.

**Program highlights**

**Sizing:**

- Sizing of safety valves according to leading worldwide codes and standards such as: API 520, ASME VIII, ISO 4126, AD 2000-Merkblatt A2
- Calculation of two-phase flow in accordance with API 520 Appendix D ( $\Omega$ -method) and fire case in accordance with API 521
- Evaluation of inlet pressure drop, back pressure in pipework, reaction forces as well as noise levels

**Settings:**

Customisable user interface:

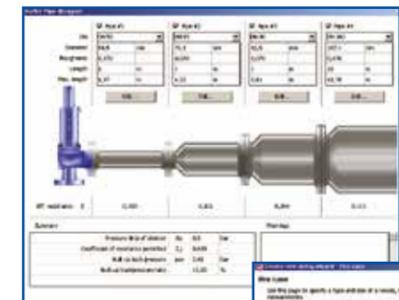
- User specified profile settings with preselection of units, calculation methods etc.
- More than 15 languages selectable

**VALVESTAR® Web:**

- Online-calculation for safety valves and projects at [www.valvestar.com](http://www.valvestar.com) without any software installation

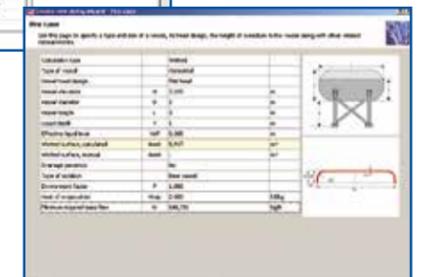
**Reports:**

- Selectable report types, e.g. project report, single page report
- Customisable design of report layouts (company logo, address etc.)
- Range of data export formats, e.g. XLS, RTF, PDF, etc.
- Integrated material part lists and sectional drawings for all LESER safety valves



**Design and handling:**

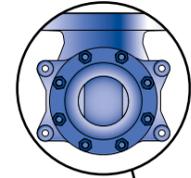
- A user friendly Wizard function leads step-by-step through the calculations
- Microsoft .Net based architecture offers latest graphical user interface for easy handling and enhanced performance



**Proven Technology**  
**Flanged Safety Valves**

LESER safety valves have been engineered and steadily developed, in close cooperation with plant engineers and service specialists, simplifying design with fewer components for less down time, fewer spare parts and lower maintenance costs.

**Integral cast support brackets** for safe handling of the valves (API and heavy safety valves).



**One piece spindle** allows better alignment.

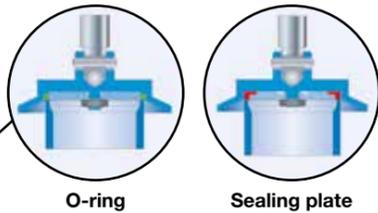
**Guiding:** Upper and lower guiding with small surface areas help reduce friction, a major cause of galling.

**Long spring** allows large pressure range for each spring thus drastically reducing the overall number of different springs.

**Single trim for steam, gas and liquids** for fewer spare valves in your stock and therefore lower storage costs.

Stellited or hardened metal sealing for longer product life.

**Soft seat solutions for superior tightness**  
O-ring or sealing plate design



LESER defines the set pressure as **“initial audible discharge”** (not “pop”). This avoids damage to valve seats during set pressure testing and allows for higher shut-off closer to set point.

**Self-draining body** avoids residue build-up and reduces corrosion.

**API:** Full nozzle design



**High Performance:**  
Semi nozzle – full bore – design

**Options**

LESER’s safety valves can be customized with a great variety of options. For further information please refer to “Available options” of each Type.

**Proven Technology**  
**Compact Performance Safety Valves**

**One piece spindle** reduces friction and allows better alignment.

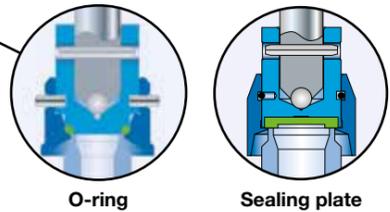
**Long spring** allows large pressure range for each spring thus drastically reducing the overall number of different springs.

**Single trim for steam, gas and liquids** for fewer spare valves in your stock and therefore lower storage costs.

Stellited or hardened metal sealing for longer product life.

**Metal seal**

**Soft seat solutions for superior tightness**  
Two designs: O-ring or plastic seat



**O-ring**

**Sealing plate**

**Threaded or flanged connections** for optimized adaption to the plant.

Self-draining body avoids residue build-up and reduces corrosion.



**Male thread**



**Female Thread**



**Flanged version**

Threaded connections male or female acc. to NPT ANSI/ASME B1.20.1. Threads according to other standards, e.g. ISO, DIN, BSP are also available.

Flanged connections acc. to ANSI/ASME B16.5. Flanges acc. to other standards, e.g. ISO, DIN, JIS are also available.

## The Company

### LESER GmbH & Co. KG

With more than 800 employees, LESER is the largest manufacturer of safety valves in Europe and a leader in its market worldwide.

LESER safety valves are used by leading companies in industries such as chemical, petrochemical, industrial gases, oil and gas production, and machine building, as well as the food and pharmaceutical industry.

LESER offers spring-loaded and pilot-operated safety valves for all industrial applications according to PED and ASME VIII as well as application-based solutions for special requirements.

LESER safety valves are developed for the international market at our headquarters in Hamburg / Germany and manufactured at our modern factory in



LESER Kontor in Hamburg, Germany

Hohenwestedt / Germany. In addition, LESER India produces safety valves for the local market.

Eight subsidiaries in Europe, America, the Middle East, and Asia, as well as authorized and trained representatives in over 80 countries guarantee competent consulting and quick, reliable delivery.

All LESER Safety Valves carry CE and ASME



LESER factory in Hohenwestedt, Germany

## Time line

<b>1885</b> Complete range of steam fittings, including safety valves	<b>1957</b> First test lab for safety valves	<b>1980s</b> Leading supplier for safety valves in Europe	<b>1994</b> Test lab receives ASME certification (first and only outside of the US)	<b>2003</b> Launch of the API Series	<b>2014</b> LESER subsidiary founded in Tianjin, China	<b>2015</b> API / Compact Performance valves produced at LESER India for local market	<b>2016</b> Move into LESER Kontor in Hamburg, Germany
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<b>1818</b> Founded as a brass foundry in Hamburg, Germany	<b>1943</b> Destruction of the plant, relocation and founding of new factory in Hohenwestedt, Germany	<b>1970s</b> Specialization in safety valves	<b>1990</b> First ASME approval	<b>1998</b> First subsidiary founded	<b>2010</b> Launch of the Pilot Operated Safety Valve	<b>2015</b> Pilot Operated Safety Valve assembly at LESER US	<b>2016</b> LESER Brasil moves into new facility
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## Why LESER

### 7 good reasons to use LESER safety valves

# 1

#### Availability

LESER is known for short response and short delivery times.

This is secured by the factory as well as by the 26 central warehouses worldwide and 85 LESER authorized repair centers (LARCS).

Unlike the competitors LESER keeps a high stock of raw material ready. This fact together with a high degree of vertical integration allows quick deliveries within 3 days as well as fast track within 24 hours for all standard safety relief valves.

# 4

# 3

#### Product Range

LESER's product range includes 9 product groups with altogether 40 safety valve types.

This means that LESER's product range offers the right product for almost every application. Multiple options and special materials complete the range as well as client-specific solutions. All safety valves have the necessary certifications for worldwide applications.

As a partner LESER offers a complete knowledge in all ranges of possible applications of safety valves and is well established in the PED and the ASME field.

# 6

#### Quality

LESER's strength is based on advanced advisory skills and support services as well as excellent product and service quality.

Modern manufacturing methods, testing facilities for air, liquids and steam (ASME and PED approved), standardized and controlled processes as well as motivated and highly qualified employees ensures LESER a great competitive advantage.

LESER's quality management disposes of multiple certifications and supervises all steps of development, engineering and manufacturing.

LESER Safety Relief Valves are unique in design and are exclusively manufactured in Germany. The final assembly is mainly carried out locally. A product 100% made in Germany can also be provided.

#### Reliability

The reliability of LESER and its products is an inherent part of the corporate philosophy.

This philosophy is characterized by high compliance with confirmed delivery dates, sustainable actions, highest quality as well as reinvestments of more than 16 Mil. € in the past few years in production facilities and the company in general.

All safety valve series are thoroughly engineered and routinely undergo exhaustive checks in LESER's own TÜV and ASME-certified test laboratory.

This is how LESER can offer a consistently high quality of products and services to the customer.

# 2

#### Global Player

LESER's sales network is present in all core markets around the world.

This enables LESER to act as a local provider, having fundamental knowledge of the local market, the cultural environment and understanding the customers.

The local LESER Product Champion is key to this knowledge.

LESER offers documentation and catalogs in 15 different languages to assist the customer with the selection and sizing.

# 5

#### Sustainability

LESER looks back on a history of over 190 years and is one of the first manufacturers of safety valves worldwide.

The company is family owned for the past 5 generations. 100% of the shares are family-owned.

The LESER family reinvests continuously in state-of-the-art machinery and raw material stocks to keep ahead on future standards.

This trust in LESER and its products is proved by a world-wide installed base of more than 2,000,000 safety valves.

# 7

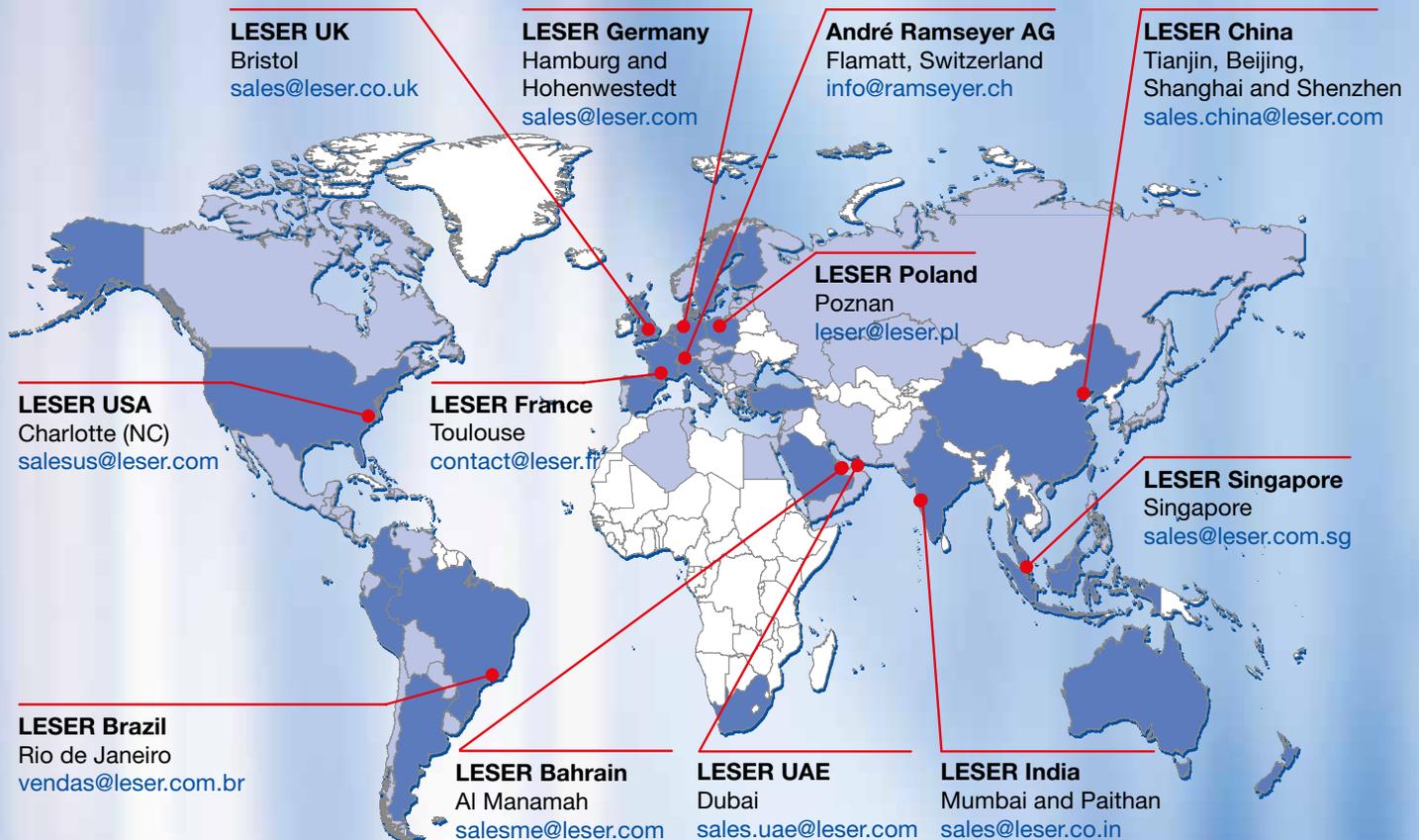
#### Price

A highly automated production in Germany guarantees an attractive cost / performance ratio for safety valves and spares.

LESER continuously invests in personnel, machinery and buildings to continue to provide this cost / performance ratio and service quality to its customers.



# LESER worldwide



- LESER stock and local assembly
- LESER representative

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# LESER

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